

THE VARIABILITY OF WESTERLY JETS AND THE ACTIVITY
OF PLANETARY WAVES IN THE STRATOSPHERIC AND MESOSPHERIC
WINTER SOUTHERN HEMISPHERE AS OBSERVED FROM NIMBUS
6 PMR (ABSTRACT)

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The pressure modulated radiometer (PMR) aboard Nimbus 6, collected radiance data from June 1975 until June 1978. These data have been processed to yield daily temperatures, geopotential heights and balance wind estimates from the stratosphere and mesosphere (20–90 km) for the entire period.

We use these data to examine the seasonal march of three kinds of the zonal mean (temperatures, zonal wavenumbers 1 and 2 of geopotential heights, and zonal winds) in the stratosphere and mesosphere winter. We concentrate especially on the behavior of the zonal mean zonal winds (the westerly jets) throughout the stratosphere and the mesosphere in the southern hemisphere (SH) winter. It can be seen that while the mesospheric mid-latitude westerly jet shifts poleward and downward in late winter, it splits into two jet—the mesospheric subtropic one and the stratospheric polar night one—the “double jet” structure. This structure is maintained for about two months. Moreover, the variability of the westerly jets is connected with the activity of planetary waves of zonal wavenumbers 1 (which shows westward phase tilt with height) and 2 (which shows little phase tilt with height).

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